



AMENDMENTS TO THE CLAIMS

(Currently Amended) A thermoelectric system comprising:

a plurality of ~~N-type thermoelectric~~ modules ~~elements~~ and a plurality of P-type thermoelectric elements;

a plurality of first and second heat transfer devices ~~shunts~~ and a plurality of ~~second shunts~~, at least some of the first heat transfer devices ~~shunts~~ sandwiched between at least two ~~one of the~~ N-type thermoelectric modules ~~elements~~ and at least one of the P-type thermoelectric elements, and at least some of the second heat transfer devices ~~shunts~~ sandwiched between at least two ~~one of the~~ P-Type thermoelectric modules ~~elements~~ and at least one of the N-Type thermoelectric elements, so as to form at least one stacked configuration of thermoelectric modules ~~elements~~ and with alternating first and second heat transfer devices ~~shunts~~, wherein at least some of the first heat transfer devices ~~shunts~~ and at least some of the second heat transfer devices ~~shunts~~ project away from the at least one ~~the~~ stack in differing directions, and wherein at least some of the first or second heat transfer devices are arranged to provide thermal isolation in the direction of a working medium movement.

2. (Currently Amended) The thermoelectric system of Claim 1, further comprising a current source electrically coupled to the stack, the ~~drive~~ current traversing at least some of ~~through the~~ heat transfer devices and thermoelectric ~~elements~~ modules in series.

3. (Currently Amended) The thermoelectric system of Claim 1, wherein the heat transfer devices thermally isolate at least some of the P-type thermoelectric modules ~~elements~~ from at least some other of the N-type thermoelectric ~~elements~~ modules.

4. (Currently Amended) The thermoelectric system of Claim 1, wherein the working medium comprises ~~heat transfer devices accept a working fluid to flow through them in a defined~~ direction.

5. (Currently Amended) The thermoelectric system of Claim 4, wherein at least some of the heat transfer devices are heat exchangers ~~comprising a housing with having a~~ plurality of heat exchanger elements ~~inside~~.

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6. (Currently Amended) The thermoelectric system of Claim 1, wherein at least some of the first heat transfer devices ~~shunts~~ are constructed of an first ~~electrode~~ portion electrically isolated from and thermally coupled to a ~~second~~ shunt portion.

7. (New) The thermoelectric system of Claim 1, wherein at least some of the thermoelectric modules comprise thermoelectric elements.

8. (New) The thermoelectric system of Claim 7, wherein the thermoelectric elements comprise alternating P-type and N-type thermoelectric elements.

9. (New) The thermoelectric system of Claim 1, wherein the direction of working medium movement is from a first stack to a second stack.

10. (New) The thermoelectric system of Claim 1, wherein the direction of working medium movement is generally in the direction of the at least one stack.

11. (New) A thermoelectric system comprising:

a plurality of thermoelectric modules;

a plurality of first heat transfer devices and a plurality of second heat transfer devices, at least some of the first heat transfer devices sandwiched between at least two thermoelectric modules, and at least some of the second heat transfer devices sandwiched between at least two thermoelectric modules, so as to form at least one stack of thermoelectric modules with alternating first and second heat transfer devices, wherein at least some of the first heat transfer devices and at least some of the second heat transfer devices project away from the at least one stack and wherein at least the first or second heat transfer devices accept at least one medium, the medium being a liquid and/or a solid.

12. (New) The thermoelectric system of Claim 11, wherein at least some of the first heat transfer devices and at least some of the second heat transfer devices project away from the at least one stack in differing directions.

13. (New) The thermoelectric system of Claim 11, wherein at least some of the first heat transfer devices accept a first medium and at least some of the second heat transfer devices accept a second medium, the first medium being a liquid and/or a solid, and the second medium selected from a group consisting of a liquid, a solid, a gas or any combination of a liquid, a solid and a gas.

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14. (New) The thermoelectric system of Claim 11, wherein the first medium is liquid and the second medium is a gas

15. (New) The thermoelectric system of Claim 11, wherein the at least one medium moves, and at least some of the first or second heat transfer devices are arranged to provide thermal isolation in the direction of the at least one medium movement.

16. (New) The thermoelectric system of Claim 11, further comprising a current source electrically coupled to the stack, the current flowing through the heat transfer devices and thermoelectric modules.

17. (New) The thermoelectric system of Claim 11, wherein at least some of the first thermoelectric modules comprise P-type thermoelectric elements and at least some of the second thermoelectric modules comprise N-type thermoelectric elements, and wherein the heat transfer devices thermally isolate at least some of the P-type thermoelectric elements from at least some of the N-type thermoelectric elements.

18. (New) The thermoelectric system of Claim 11, wherein the at least one medium is a moving working medium.

19. (New) The thermoelectric system of Claim 11, wherein the at least one heat transfer devices are heat exchangers having heat exchanger elements.

20. (New) The thermoelectric system of Claim 11, wherein at least some of the first heat transfer devices are constructed of an electrode portion electrically isolated from and thermally coupled to a shunt portion.

21. (New) A thermoelectric system comprising:

a plurality of thermoelectric modules, wherein at least some of the thermoelectric modules are sized to provide high power density operation;

a plurality of first heat transfer devices and a plurality of second heat transfer devices, at least some of the first heat transfer devices sandwiched between at least two of the thermoelectric modules, and at least some of the second heat transfer devices sandwiched between at least two of the thermoelectric modules, so as to form a stacked configuration of thermoelectric modules and with alternating first and second heat transfer devices.

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22. (New) The thermoelectric system of Claim 21, wherein at least some of the plurality of thermoelectric modules are N-type thermoelectric elements and at least some of the thermoelectric modules are P-type thermoelectric elements.

23. (New) The thermoelectric system of Claim 22, wherein at least some of the N-type and or P-type thermoelectric elements are between 5 microns and 1.2 millimeters thick with relatively large ratio of area to the length in the direction of current flow of the thermoelectric elements.

24. (New) The thermoelectric system of Claim 23, wherein the ratio is about 6 to 1.

25. (New) The thermoelectric system of Claim 23, wherein at least some of the N-Type and or P-type thermoelectric elements are between 20 microns and 300 microns thick.

26. (New) The thermoelectric system of Claim 23, wherein at least some of the N-Type and or P-type thermoelectric elements are between 20 microns and 200 microns thick.

27. (New) The thermoelectric system of Claim 23, wherein at least some of the N-Type and or P-type thermoelectric elements are between 20 microns and 100 microns thick.

28. (New) The thermoelectric system of Claim 23, wherein at least some of the N-Type and or P-type thermoelectric elements are between 100 microns and 600 microns thick.

29. (New) The thermoelectric system of Claim 21, wherein at least some of the first or second heat transfer devices are arranged to provide thermal isolation in the direction of a working medium flow.

30. (New) The thermoelectric system of Claim 21, further comprising a current source electrically coupled to the stack, the current traversing through the heat transfer devices and thermoelectric modules in series.

31. (New) The thermoelectric system of Claim 22, wherein the heat transfer devices thermally isolate at least some of the P-type thermoelectric elements from at least some of the N-type thermoelectric elements.

32. (New) The thermoelectric system of Claim 21, wherein at least some of the heat transfer devices accept a moving working fluid.

33. (New) The thermoelectric system of Claim 32, wherein at least some of the heat transfer devices are heat exchangers comprising a housing with heat exchanger elements inside.

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34. (New) The thermoelectric system of Claim 21, wherein at least some of the first heat transfer devices are constructed of an electrode portion electrically isolated from and thermally coupled to a shunt portion.

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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,
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